Fire Weather Services

Vision

To eliminate weather-related wildland fire fatalities and injuries, and to reduce fire suppression and land management costs by providing more timely and accurate weather information.

Concept of Operations

When fuels and meteorological conditions warrant, WFO forecasters issue Fire Weather Watches and Red Flag Warnings for fire weather patterns that contribute to extreme fire danger. Site-specific forecasts may also be generated to support land agency's efforts to suppress or control wildland fires.

Fire Weather Services provide on-site meteorological support to wildland fires. This support is done by sending specially trained Incident Meteorologists (IMET) to the fire location. The Storm Prediction Center (SPC) issues national outlooks identifying critical fire weather patterns.

Locally, NWS forecasters produce a meteorologically consistent gridded forecast database, including fire weather parameters. From this database, fire weather zone forecasts are issued for pre-suppression planning and for the National Fire Danger Rating System (NFDRS).

Customer and Partner Requirements

- ✓ Deliver probabilistic outlooks for critical fire weather patterns (days 2-7).
- ✓ Distribute smoke management information.
- ✓ Generate high-resolution forecast/model grids for input into fire behavior/fire danger tools.

Link to Science and Technology Infusion Plan

The 10-year goal of Fire Weather Services is to improve on-site and site-specific wildland fire support capabilities and to provide probabilistic weather information for enhanced planning and decision making. Better on-site and site-specific support will include improved fire-scale observations, higher-resolution fire weather modeling, and routine verification of products and services.

Product and Service Changes

- ✓ Develop Relative Humidity (RH), Transport Wind, and Mixing Height as experimental NDFD grid elements.

Science and Technology Requirements

- ✓ Deliver probabilistic forecast information for resource decision making.
- ✓ Run mesoscale model forecasts for active fire areas.

✓ Investigate methods to "push" digital forecast data into land management agency decision support systems.

Performance Measures

Performance measures in Fire Weather services have traditionally been recorded in the fire-prone western U.S. The Fire Weather program has recently been expanded in the NWS, and new national baseline measurements of warning and watch parameters will be developed over the next few seasons. Until new baselines are produced, performance measures will be based on numbers from the western U.S.

Fire Weather Performance Measures

Measure	1999 - 2003 baseline	FY 2004	FY 2005
Red Flag Probability of Detection*	89%	90%	91%
Red Flag Lead Time*	9.2 hours	9.3 hours	9.4 hours

** Based on western U.S. performance only.*
Note: National baselines are currently being developed for Red Flag Warnings. In 2003, the first year the national statistics were produced, the national Probability of Detection was 86 percent and the lead time was 7.6 hours. After 3 years of national performance results have been accumulated, the performance measures will be adjusted and national numbers will be used.

Milestones by Quarter

1st Quarter

- Develop Fire Weather Concept of Services.
- Develop requirements and concept of operations for the Next Generation All Hazards Meteorological Response System (NEXAMRS).
- Conduct 3rd annual Fire Weather Program Manager's Meeting.

2nd Quarter

- Develop Fire Weather Center Concept of Operations and Services.
- Develop new initiatives related to probabilistic fire weather forecasts, gridded NFDRS forecasts, extending NFDRS forecasts to 7 days, extended spot forecast, and gridded forecasts by IMET on site for input to fire behavior models.

3rd Quarter

- Initiate verification program for NFDRS forecasts.
- Conduct Incident Meteorologist Workshop.
- Integrate the NWS Spot Forecast Program into AWIPS, providing high resolution first guess fields from forecaster-produced grids.

4th Quarter

- Gain other agency support for Fire Weather Center Concept of Operations and Services.

Integrated Requirements

✓ Improve integration of Remote Automatic Weather Stations (RAWS) observations into the AWIPS system.

✓ Integrate NWS Spot Forecast system into AWIPS to maximize advantages of digital forecast databases.

Outreach

Fire Weather Services are actively involved with customers at the national and local levels. NWS will participate in several national interagency working teams in 2005 including:

- ✓ Fire Danger Working Team
- ✓ Fire Weather Working Team
- ✓ Predictive Services Working Group

These teams discuss and work on national issues related to fire danger, fire weather, and fire behavior. At the local level, most WFOs with fire weather programs will meet with customers twice during the next year.

Verification

Verification measures in Fire Weather have been sporadic and focused primarily on the fire-prone western U.S.. In 2004, the requirements were developed to add verification data for Red Flag Warnings and Fire Weather Watches to the national baselines.

By 2006, the baseline will be used to adjust national performance measures. Requirements for generating baselines for NFDRS for temperature, relative humidity, and wind will be documented.

Regional Initiatives

Southern

- ✓ Develop regional strategic plan for fire weather.

Western

- ✓ Develop prototype of format to prepare a fire weather forecast for a large National forest using gridded data from multiple WFOs.
- ✓ Test Web-based EMWIN as a means to relay all weather warnings to wildland fire agencies at selected WFOs.
- ✓ Develop a baseline for lead time of Red Flag Warnings for dry thunderstorms.
- ✓ Conduct a Web-based customer survey of fire weather customers.
- ✓ Test addition of non-Red Flag critical weather headlines to Fire Weather Zone forecasts at selected WFOs.
- ✓ Test EWARN as a means to relay weather warnings to fire weather customers at one or more WFOs.

Contact Information

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